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## CATALOGUE

OF

### APPARATUS FOR TEACHING CHEMISTRY.

**SUBJECT X.—Inorganic Chemistry.**

**SUBJECT XI.—Organic Chemistry.**



LONDON:

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12.11.67.

## INSTRUCTIONS.

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All applications for apparatus are to be made on Science Form No. 49, which will be supplied on application to the Secretary, Science and Art Department, South Kensington.

The prices given in the right-hand column are the highest on which the aid of 50 per cent. is given. The applicant is at liberty to select a higher-priced article, but the aid towards the purchase of it will be only 50 per cent. of the price in the right-hand column. Should a lower-priced article be selected the aid will be only to the extent of 50 per cent. of its price. No aid is given on those articles to which no such price is attached.

Apparatus grants are rigorously confined to articles of a permanent and non-destructible nature; hence no aid is afforded in the purchase of breakable articles, such as glass retorts, test tubes, &c., or indeed generally in the purchase of articles to be used by the student as distinguished from those of a permanent and illustrative character which are required by the teacher in giving instruction in science. To such articles no prices are affixed in the right-hand column; the articles are mentioned simply to assist teachers in their selection.

N.B.—In filling up No. 49, the number of the apparatus must always be mentioned.

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## ADDRESSES OF MANUFACTURERS :—

GRIFFIN, 119, Bunhill Row, E.C.

HORNE AND THORNTHWAITHE, Newgate Street, E.C.

JACKSON AND TOWNSON, 89, Bishopsgate Street Within, E.C.

BOLTON AND BARNITT, 146, Holborn Bars, E.C.



# APPARATUS FOR TEACHING THE ELEMENTS OF CHEMISTRY.

<b>1.—Apparatus to show the electrolysis of water.</b>		£	s.	d.
Griffin, 2s. 6d., 7s., 14s., and 21s.		1	1	0
Jackson and Townson, 5s., 7s. 6d., 11s. 6d., and 21s.				
Horne and Thornthwaite, 7s. 6d.				
Bolton and Barnitt, 5s. 6d., and 7s. 6d.				
<b>2.—Aspirator.</b>				
Griffin, 5s. 6d. to 10s. 6d.		0	10	6
Jackson and Townson, 5s. to 25s.				
Horne and Thornthwaite, 21s. to 63s.				
Bolton and Barnitt, 5s. to 7s. 6d.				
<b>3.—Battery.</b>				
Griffin, 6 cells, Smee's, in frame, 2l. 12s. 6d.		2	12	6
Jackson and Townson, Smee's, 6 elements, 1l. 15s.,				
Groves', 6 elements, 2l. 12s., in trays.				
Horne and Thornthwaite, 6 cells, Smee, 3l. 10s.,				
Groves, 8 cells, 5l.				
Bolton and Barnitt, 4s. 6d., and 6s. 6d.; sets of six,				
1l. 16s.				
<b>4.—Balloon gold beater's skin.</b>				
Griffin, 1s. 3d., 2s. 6d., and 4s. 6d.		0	2	6
Jackson and Townson, 18 in. circumf., 1s.; 36 in.				
2s. 6d.; to 70 in. 12s. 6d.				
Horne and Thornthwaite, 1s. to 6s. 6d.				
Bolton and Barnitt, 1s. 3d., 1s. 6d., and 2s.				
<b>5.—Burette.</b>				
Griffin, 3s. to 8s.		0	6	6
Jackson and Townson, 100 divisions, 5s.; 200, 6s. 6d.				
Horne and Thornthwaite, 6s. each.				
Bolton and Barnitt, 3s. 6d., 4s. 6d., 6s. 6d.				
<b>6.—Bell jars.</b>				
Griffin, 1s. to 5s.				
Jackson and Townson, 10 ozs. to 160 ozs., open,		0	8	6
10d. to 5s.; stoppered, 1s. 3d. to 6s. 6d.				
Horne and Thornthwaite, 2s. to 8s. 6d.				
Bolton and Barnitt, plain, 1s., 1s. 6d., and 2s.,				
stoppered, 1s. 6d., 2s., and 2s. 6d. to 6s. 6d.				
<b>7.—Beakers.</b>				
Griffins, 7d., 2s., 8s., 12s., per nest.		0	10	6
Jackson and Townson, sets of 3 to 13, 10d. to 10s. 6d.				
Horne and Thornthwaite, from 1s. to 10s. 6d. per nest.				
Bolton and Barnitt, per set, 1s. 6d., 2s. 6d., 5s., and 8s.				

**8.—Bulb tubes.**

Griffin, 3*d.* to 6*d.* each.  
 Jackson and Townson, 3*d.* to 6*d.* each.  
 Horne and Thornthwaite, 1*s.* 6*d.* per dozen.  
 Bolton and Barnitt, 3*d.* to 6*d.* each.

£ s. d.  
 0 1 6

**9.—Combustion tubing.**

Griffin, 6*d.* each, and 1*s.* 4*d.* per lb. in lengths.  
 Jackson and Townson, hardest, 2*s.* per lb.  
 Horne and Thornthwaite, 2*s.* 6*d.* per lb.  
 Bolton and Barnitt, 1*s.* 6*d.* per lb.

0 2 0

**10.—Condenser.**

Griffin, with support, 12*s.* 6*d.*  
 Jackson and Townson, 5*s.* 6*d.*, 7*s.* 6*d.*, 12*s.* 6*d.* to 17*s.* 6*d.*  
 Horne and Thornthwaite (Liebig's), 7*s.* 6*d.*  
 Bolton and Barnitt (Liebig's), 12*s.* 6*d.* to 1*l.*

0 12 6

**11.—Caoutchouc tubing for gas and connectors.**

Griffin, 3*d.* to 1*s.* 4*d.* per foot.  
 Jackson and Townson, 3*d.* to 1*s.* 9*d.* per foot.  
 Horne and Thornthwaite, 6*d.* to 1*s.* per foot.  
 Bolton and Barnitt, per foot, 6*d.* to 1*s.*

**12.—Cylinders.**

Griffin, from 1*s.* upwards.  
 Horne and Thornthwaite, 2*s.* 6*d.* to 5*s.*  
 Bolton and Barnitt, sets of 4 and 6, 2*s.* 6*d.*, and 4*s.* 6*d.* each.

**13.—Cork borers.**

Griffin, set of six, 2*s.* 9*d.*  
 Jackson and Townson, sets of 2 to 12, 10*d.* to 6*s.*  
 Bolton and Barnitt, 2*s.* 6*d.* to 5*s.* 6*d.*

0 2 9

**14.—Crucibles.**

Griffin, fireclay, porcelain, &c., from 1*d.*  
 Jackson and Townson, black lead, 2*d.* to 18*s.* each,  
 Cornish, 10*d.* to 15*s.* per dozen, porcelain, 3*d.* to 1*s.* 4*d.* each, Hessian, from 2*d.* to 2*s.* 3*d.*  
 Horne and Thornthwaite, Hessian, 5*d.* to 2*s.* 6*d.* per nest.  
 Bolton and Barnitt (porcelain), 6*d.* to 1*s.* 4*d.* each;  
 Hessian from 6*d.* a dozen.

**15.—Crucible tongs.**

Griffin, 1*s.* 2*d.* to 4*s.* 6*d.*  
 Jackson and Townson, 1*s.* to 4*s.* 6*d.*  
 Horne and Thornthwaite, 1*s.* 6*d.* each.  
 Bolton and Barnitt, from 1*s.*

**16.—Dishes, evaporating.**

Griffin, porcelain, of all kinds, from 3*d.*  
 Jackson and Townson, porcelain, 1½ ozs. 4*d.*, to 380 ozs. 24*s.*; composition, 8 ozs. 4*d.*, to 400 ozs. 10*s.* 6*d.*  
 Horne and Thornthwaite, 6*d.* to 10*s.* each.  
 Bolton and Barnitt, 6, 8, and 10, 1*s.*, 1*s.* 3*d.*, 1*s.* 6*d.*, 2*s.*, 2*s.* 6*d.*, to 12*s.* 6*d.*



**17.—Deflagrating spoon with brass cap.**

Griffin, 1s. and 2s. 6d.  
 Jackson and Townson, 1s. and 2s. each.  
 Horne and Thornthwaite, 1s. 6d. each.  
 Bolton and Barnitt, 2s.

£ s. d.  
 0 2 0

**18.—Eudiometer.**

Griffin, 4s. 6d., 6s., 7s. 6d.  
 Jackson and Townson, 6s. 6d. to 8s. 6d.  
 Horne and Thornthwaite, Volta's, 7s., Ure's, 9s.  
 Bolton and Barnitt, 6s. 6d.

0 9 0

**19.—Filter paper.**

Griffin, 1s. 6d. per quire, (4 square feet), and 3s.  
 (Swedish).  
 Jackson and Townson, 1s. to 4s. per quire.  
 Horne and Thornthwaite, 1s. per quire.  
 Bolton and Barnitt, *best white*, 1s. 6d. per quire,  
 common, 1s.

**20.—Filter stand, wooden.**

Griffin, 1s. to 6s.  
 Jackson and Townson, 1s. 6d. to 2s. 6d.  
 Horne and Thornthwaite, 2s.  
 Bolton and Barnitt, 1s.

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**21.—Flasks.**

Griffin, from 1½d. upwards.  
 Jackson and Townson, 1 oz. 2d., to 160 ozs. 2s. 9d.  
 each.  
 Horne and Thornthwaite, 4d. to 1s. 6d. each.  
 Bolton and Barnitt, 4d. to 2s. each.

**22.—Funnels.**

Griffin, 1½d. to 1s. each.  
 Jackson and Townson, 1½d. to 2s. 6d. each.  
 Horne and Thornthwaite, 6d. to 2s. each.  
 Bolton and Barnitt, 3d. to 1s. 6d. each.

**23.—Funnel tubes.**

Griffin, 2d. to 6d. each.  
 Jackson and Townson, 4d. to 6d. each.  
 Horne and Thornthwaite, 4d. to 8d. each.  
 Bolton and Barnitt, 6d. each.

**24.—Furnace to heat iron or porcelain tubes.**

Griffin, 1l. 16s.  
 Jackson and Townson, 18s. to 2l. 2s.  
 Horne and Thornthwaite, 1l. 16s.  
 Bolton and Barnitt, 2l. to 4l. 4s.

1 16 0

**25.—Glass tubing.**

Griffin, 1s. 4d. per lb.  
 Jackson and Townson, free from lead, 1s. 6d. per lb.  
 Horne and Thornthwaite, 1s. 9d. to 2s. per lb.  
 Bolton and Barnitt, 1s. 6d. per lb.

**26.—Gas lamp, exclusive of furnace fittings.**

Griffin, 1s. 9d. to 10s. 6d.

Jackson and Townson, 2s., 5s. 6d. to 10s. 6d.

Horne and Thornthwaite, 7s. 6d.

Bolton and Barnitt, various, 2s. 6d. upwards.

£ s. d.  
0 7 6**27.—Gas bottle.**

Griffin, from 1s. and upwards.

Jackson and Townson, 1s. 6d. to 2s. 6d.; iron, 5s. 6d.

Horne and Thornthwaite (copper), 12s. 6d.

Bolton and Barnitt, 1s. 6d. to 3s. 6d.

0 3 6

**28.—Gas holder, Pepys.**

Griffin, 2l. 5s.; without trough, 28s.

Jackson and Townson, with stopcock, 2 galls, 21s.,  
8 galls., 34s.

Horne and Thornthwaite, 1l. 1s. to 8l.

Bolton and Barnitt, 2 gal. 1l. 4s., 4 gal. 1l. 8s.,  
6 gal. 34s.

0 10 0

**29.—Glass plates.**

Griffin, from ½d. each.

Jackson and Townson, 2 in. diameter, 1d., 9 in. 8d.

Horne and Thornthwaite, 6d. to 1s.

Bolton and Barnitt, 2s. to 6s. per dozen.

**30.—Glass rods.**

Griffin, 2d. to 1s. 6d. a dozen.

Jackson and Townson, 1s. 6d. per lb.; stirring rods,  
2s. 6d. per lb.

Horne and Thornthwaite, 3s. per dozen.

Bolton and Barnitt, 1s. 4d. per lb.

**31.—Herapath's blowpipe.**

Griffin, 7s. 6d., 15s.

Jackson and Townson, 7s. 6d. to 9s. 6d.

Horne and Thornthwaite, 7s. 6d.

Bolton and Barnitt, 7s. 6d.

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**32.—Mariotte's tube.**

Griffin, 10s. 6d. to 15s.

Jackson and Townson, 10s. 6d., to 21s.

Horne and Thornthwaite, 10s. 6d.

Bolton and Barnitt, 10s. 6d.

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**33.—Mercurial trough.**

Griffin, 1s. 3d. to 2l. 10s.

Jackson and Townson, porcelain, 1s. 9d., 2s. 6d. and 3s.

Horne and Thornthwaite, 2s. 6d. to 3s. 6d.

Bolton and Barnitt, 1s. 9d. to 4s.

0 4 0

**34.—Mercury, per lb. 5s.**

Griffin

Jackson and Townson

Horne and Thornthwaite

Bolton and Barnitt

5s. per lb.

0 10 0



**35.—Pneumatic trough.**

Griffin, 2s. 8d. to 3l. 3s.  
 Jackson and Townson, 2s. to 10s.  
 Horne and Thornthwaite, 4s. to 15s.  
 Bolton and Barnitt, 5s. 6d. to 12s.

£ s. d.

0 15 0

**36.—Pestle and mortar.**

Griffin, from 6d. to 5s. each.  
 Jackson and Townson, 3, 4, 5, 8 in. diam., 1s. 6d.,  
 2s., 3s., and 6s.  
 Horne and Thornthwaite, 1s. to 5s.  
 Bolton and Barnitt, from 1s. to 5s.

0 5 0

**37.—Pipettes.**

Griffin, 1d. to 1s. each.  
 Jackson and Townson, 3d. to 1s.  
 Horne and Thornthwaite, 6d. to 1s. each.  
 Bolton and Barnitt, 3d. each.

**38.—Platinum crucibles.**

Griffin, 10s. to 3l. 10s.  
 Jackson and Townson, about 1 oz., cap., 1l. 10s.  
 Horne and Thornthwaite, from 10s. 6d. to 5l.  
 Bolton and Barnitt, 12s. to 1l. 15s.

1 10 0

**39.—Platinum wire.**

Griffin  
 Jackson and Townson  
 Horne and Thornthwaite  
 Bolton and Barnitt

} 1d. per grain.

**40.—Retort stands.**

Griffin, 1s. 9d. to 1l. 1s.  
 Jackson and Townson, 1s. to 17s. 6d.  
 Horne and Thornthwaite, 2s. 6d. to 10s. 6d.  
 Bolton and Barnitt, 2s. 6d. to 7s. 6d.

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**41.—Retorts.**

Griffin, 1½d. to 1l. 1s. each.  
 Jackson and Townson, plain, 2 ozs. to 64 ozs. 3d. to  
 1s. 9d.; stoppered, 9d. to 3s. 6d.  
 Horne and Thornthwaite, 6d. to 5s.  
 Bolton and Barnitt, 6d. to 5s.

**42.—Receivers.**

Griffin, 2d. to 1l. 1s.  
 Jackson and Townson, 3d. to 5s. 6d.  
 Horne and Thornthwaite, 1d. to 3s. 6d.  
 Bolton and Barnitt, 6d. to 5s.

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**43.—Sand bath.**

Griffin, 3s. to 6s.  
 Jackson and Townson, 6d. to 2s.  
 Horne and Thornthwaite, 6d.  
 Bolton and Barnitt, 6d. to 1s. 6d.

0 3 0

**44.—Spirit lamp.**

Griffin, 1s. to 2s. 6d., argand, 16s. 6d. to 1l. 11s. 6d.  
 Jackson and Townson, 1s. to 4s. 6d.; argand, 3s. 6d.,  
 5s., 7s. 6d.; with porcelain foot, 16s., 21s.  
 Horne and Thornthwaite, 1s. 6d. to 5s.  
 Bolton and Barnitt, 1s. 3d.; argand, 18s. to 30s.

£ s. d.  
 0 7 6

**45.—Triangle.**

Griffin, 2d. to 1s.  
 Jackson and Townson, 2d. to 6d.  
 Horne and Thornthwaite, 3d. each.  
 Bolton and Barnitt, 6d.

**46.—Test tubes.**

Griffin, 4d. to 2s. 6d. per dozen.  
 Jackson and Townson, 10d. to 5s. 6d. per dozen.  
 Horne and Thornthwaite, 2s. per dozen.  
 Bolton and Barnitt, 6d. to 2s. 6d. per dozen.

**47.—Test glasses.**

Griffin, 3s. 6d. to 18s. per dozen.  
 Jackson and Townson, 3s. to 8s. per dozen.  
 Horne and Thornthwaite, 3s. per dozen.  
 Bolton and Barnitt, 3s. to 8s. per dozen.

**48.—Water bath.**

Griffin (hot water), 25s. to 42s.  
 Jackson and Townson, 12s. 6d. to 1l. 6s.  
 Horne and Thornthwaite, 2s.  
 Bolton and Barnitt, 7s. 6d.

1 5 0

**49.—Wire gauze.**

Griffin, 1s. 6d. per square foot.  
 Jackson and Townson, 1s. 4d. per square foot.  
 Horne and Thornthwaite, 1s. 6d. per square foot.  
 Bolton and Barnitt, 6d.

**50.—Woulfe's bottles.**

Griffin, 10d. to 6s. 6d. each.  
 Jackson and Townson, 3 necks, 4 ozs. 1s., to 160 ozs.  
 7s. 6d.  
 Horne and Thornthwaite, set of three, 1s., to 160 oz.  
 Bolton and Barnitt, 1s. to 5s. each.

0 7 6



## ORGANIC CHEMISTRY.

## 1.—Air oven.

	£	s.	d.
Griffin, Taylor's, 12s. 6d., Bunsen's, 17. 10s.	1	10	0
Jackson and Townson, 9s., 14s., 17. 10s.			
Horne and Thornthwaite (Tayler's), 18s. to 17. 12s.			
Bolton and Barnitt (in copper), 17. 5s. to 17. 15s.			

## 2.—Apparatus to show contraction on mixing alcohol with water.

	£	s.	d.
Griffin, 5s. 6d.	0	5	6
Horne and Thornthwaite, 4s.			
Bolton and Barnitt, 3s. 6d. to 5s. 6d.			

## 3.—Balance.

	£	s.	d.
Jackson and Townson, 27. 2s. to 157., in glass case.	6	0	0
Horne and Thornthwaite, from 27. 2s. to 177. 17s.			
Bolton and Barnitt, 37. 3s. to 67. 6s., 87. 8s.			

## 4.—Combustion tubing.

Griffin, 6d. each, 1s. 4d. per lb.  
 Horne and Thornthwaite, 1s. each.  
 Jackson and Townson, hardest, 6s. doz.; 2s. per lb.  
 Bolton and Barnitt, 6s. per dozen.

## 5.—Combustion mortar.

	£	s.	d.
Griffin, 2s. to 3s. 6d. each.	0	4	0
Jackson and Townson, 3½ in., 2s. 6d.; 5 in., 4s.			
Horne and Thornthwaite, 4s. each.			
Bolton and Barnitt, 1s. 9d. to 2s. 9d. each.			

## 6.—Combustion furnace.

	£	s.	d.
Griffin, for charcoal, 4s.; for gas, Hofmann's, 67. 6s. to 127. 12s.; Griffin's, 37. 3s. to 67. 6s.	6	6	0
Jackson and Townson, Liebig's, 5s. to 7s. 6d., Hofmann's, 67. 6s. to 127. 12s.			
Horne and Thornthwaite, 5s.			
Bolton and Barnitt, from 4s.			

## 7.—Chloride of calcium tube.

	£	s.	d.
Griffin, 2d., 3d., and 1s. each.	0	1	6
Jackson and Townson, 3d. to 1s. 6d. each.			
Horne and Thornthwaite, 1s. each.			
Bolton and Barnitt, 2d. to 4d. each.			

## 8.—Nitrogen bulbs.

	£	s.	d.
Griffin, 8d.	0	1	6
Jackson and Townson, 1s.			
Horne and Thornthwaite, 1s. 6d. each.			
Bolton and Barnitt, 1s. 6d. each.			

**9.—Nitrogen tubes (graduated).**

Jackson and Townson, 3s. to 5s.  
 Horne and Thornthwaite, 15s.  
 Bolton and Barnitt, 1s. 6d.

£ s. d.  
 0 5 0

**10.—Potassa bulbs.**

Griffin, 1s. 6d.  
 Jackson and Townson, 2s. 6d. in case.  
 Horne and Thornthwaite, 3s.  
 Bolton and Barnitt, 1s. 6d. to 2s. 6d.

0 2 6

**11.—Vapour density apparatus.**

Horne and Thornthwaite, 10s. 6d.  
 Bolton and Barnitt, complete with copper gasholder,  
 10l. to 25l.

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**12.—Water ovens.**

Griffin, 1l. 5s. to 2l. 2s.  
 Jackson and Townson, 12s. 6d., 1l. 1s., 1l. 6s., and  
 2l.  
 Horne and Thornthwaite, 12s.  
 Bolton and Barnitt (copper), 1l. 5s. to 3l., (tin),  
 12s. 6d.

2 0 0

**13.—Watch glasses.**

Griffin, 1s. per dozen.  
 Jackson and Townson, 1s. to 5s. per dozen.  
 Horne and Thornthwaite, 2s. per dozen.  
 Bolton and Barnitt, 2s. per dozen.

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